

IMPACT OF CLIMATE CHANGE ON HEAT RELATED MORTALITY AND MORBIDITY IN EUROPE

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Background and Aims: Public health concerns about the health effects of extreme temperatures have risen because of the intense heatwaves of 2003 and 2006 in Europe. Climate change projections indicate that average temperatures are rising and that the intensity, frequency, and duration of extreme heat events will increase. As a part of the Climate-TRAP project we used emission scenarios, models and epidemiological data to assess heat related health impacts under a changing climate.

Methods: Gridded climate data were obtained as a 50x50km grid for Europe using two global climate models (HADCM3 and ECHAM4) regionally downscaled over Europe with the RCA3. Modelled temperature and humidity data for the time periods 1961-1990 and 2021-2050 was used to represent the recent and future climatic conditions. Data for the A1B and A2 greenhouse gas emission scenarios (modelled with HADCM3 and ECHAM4 respectively) were used to illustrate possible outcomes for different climate scenarios. We used exposure response functions determined for a number of European cities within the PHEWE-project.

Results: Future temperatures are predicted to increase the expected annual mortality for Europe in 2021-2050 compared to 1961-1990 by 1.15% and 1.28% for the A1B and the A2 scenarios, respectively. The increase differs between countries, with a range from no increase in heat-related mortality for the Baltic countries to increases above 3% for Spain, Slovenia and Portugal. For hospital admissions, the expected increase is substantially lower than the estimations for mortality with increases ranging up to 0.66% in Spain.

Conclusions: This study suggest that the expected annual increase in heat related mortality in 2021-2050 compared to 1961-1990 in Europe is in the same order of magnitude as the excess number of heat related deaths during the 2003 heatwave over Europe .